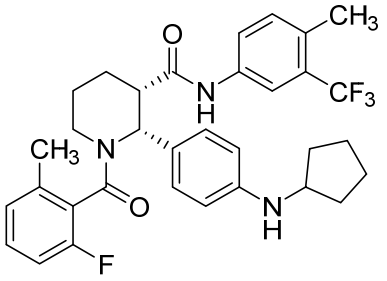
CLAIMS

1. An amorphous form of Compound 1



(Compound 1)

characterized by an X-ray powder diffraction pattern having no distinct peaks, which is substantially free of other forms of Compound 1.

2. The amorphous form of Compound 1 according to claim **1**, characterized by an X-ray powder diffraction pattern substantially in accordance with **FIG. 2**.

3. The amorphous form of Compound 1 according to claim **1** or claim **2**, further characterized by:

(a) a glass transition temperature of about 108 °C, as determined by differential scanning calorimetry; or

(b) a differential scanning calorimetry (DSC) thermogram substantially in accordance with **FIG. 4**.

4. The amorphous form of Compound 1 according to any one of claims **1** to **3**, further characterized by:

(a) a weight loss of about 0.015% up heating to around 235 °C, as measured by thermal gravimetric analysis (TGA); or

(b) a thermal gravimetric analysis (TGA) thermogram substantially in accordance with **FIG. 5**.

5. The amorphous form of Compound 1 according to any one of claims **1** to **4**, further characterized by:

(a) a weight gain of about 0.44% after undergoing a dynamic vapor sorption (DVS) cycle from about 0% relative humidity (RH) to about 95% RH at 25 ºC; or

(b) a weight gain of about 0.31% after undergoing a dynamic vapor sorption (DVS) cycle from about 0% relative humidity (RH) to about 65% RH at 25 ºC; or

(c) a dynamic vapor sorption (DVS) plot that does not exhibit any hysteresis between adsorption and desorption; or

(d) a dynamic vapor sorption (DVS) plot substantially in accordance with **FIG. 6**.

6. The amorphous form of Compound 1 according to any one of claims **1** to **5**, further characterized by:

(a) a scanning electron microscopy (SEM) image having predominantly spherical particles, wherein spherical particle sizes are preferably about 2 μm to 50 μm, as determined by SEM; or

(b) scanning electron microscopy (SEM) image substantially in accordance with FIG. 8A, FIG. 8B, FIG. 8C, or FIG. 8D.

7. The amorphous form of Compound 1 according to any one of claims **1** to **6**, further characterized by:

(a) a polarized light microscope (PLM) profile lacking birefringence; or

(b) a polarized light microscope (PLM) profile substantially as shown in FIG. 9A, FIG. 9B, or FIG. 9C.

8. A process for preparing an amorphous form of Compound 1, selected from Process (1) and Process (2), wherein:

Process (1) comprises:

a) dissolving Compound 1 in a polar, aprotic solvent to form a solution;

b) spray drying the solution to form an amorphous form of Compound 1;

and Process (2) comprises:

a) dissolving Compound 1 in a polar, aprotic solvent to form a solution, wherein the concentration of Compound 1 in the solution is no more than 0.3 g/mL;

b) optionally filtering the solution to form a filtrate; and

c) removing solvent from the solution or the filtrate to form an amorphous form of Compound 1.

9. The process of claim **8**, which is Process (1) and wherein:

(i) the polar, aprotic solvent is selected from the group consisting of tetrahydrofuran (THF), acetone, dichloromethane (DCM), and mixtures thereof; or

(ii) the polar, aprotic solvent is THF; or

(iii) the polar, aprotic solvent is acetone; or

(iv) the polar, aprotic solvent is DCM.

10. A composition which is:

(1) a pharmaceutical composition comprising the amorphous form of Compound 1 according to any one of claims **1** to **7** and at least one pharmaceutically acceptable excipient; or

(2) an aqueous suspension comprising the amorphous form of Compound 1 according to any one of claims **1** to **7** and at least one excipient; or

(3) an injectable or infusible solution comprising Compound 1 and at least one wetting agent or solvent, wherein the injectable or infusible solution is obtainable using the amorphous form of Compound 1 according to any one of claims **1** to **7**.

11. The composition of claim **10**, which is composition (2) and wherein:

(a) the at least one excipient is at least one suspending agent and/or at least one wetting agent; and/or

(b) the aqueous suspension further comprises a sweetening agent.

12 . The composition of claim **10**, which is composition (3) and wherein:

(a) the injectable or infusible solution is prepared for intravenous administration, intramuscular administration, or subcutaneous injection; and/or

(b) the injectable or infusible solution is obtainable shortly before use by dissolving the amorphous form of Compound 1 with the at least one wetting agent or solvent.

13. A compound or composition for use, wherein:

(1) the compound or composition is the injectable or infusible solution of composition (3) of claim **10**, and the use comprises

dissolving the amorphous form of Compound 1 with the at least one wetting agent or solvent to prepare an injectable or infusible solution; and

the injectable or infusible solution is to be administered to a subject in need thereof; or

(2) the compound or composition is an amorphous form of Compound 1 according to any one of claims **1** to **7**, and the use is for treating an individual suffering from or susceptible to a disease or disorder involving pathologic activation of C5a receptors, comprising the amorphous form of Compound 1 according to any one of claims **1** to **7** to be administered to the individual.

14. The compound or composition for use of claim **13**, wherein option (2) applies, and wherein:

(a) the disease or disorder is an inflammatory disease or disorder; or

(b) the disease or disorder is a cardiovascular or cerebrovascular disorder; or

(c) the disease or disorder is an autoimmune disorder; or

(d) the disease or disorder is a pathologic sequelae associated with the group consisting of insulin-dependent diabetes, mellitus, lupus nephropathy, Heyman nephritis, membranous nephritis, glomerulonephritis, contact sensitivity responses, and inflammation resulting from contact of blood with artificial surfaces; or

(e) the disease or disorder is selected from the group consisting of anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis, C3 glomerulopathy, hidradenitis suppurativa, and lupus nephritis; or

(f) the disease or disorder is anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis; or

(g) the disease or disorder is granulomatosis with polyangiitis; or

(h) the disease or disorder is microscopic polyangiitis; or

(i) the disease or disorder is C3 glomerulopathy; or

(j) the disease or disorder is hidradenitis suppurativa; or

(k) the disease or disorder is lupus nephritis.

15. The compound or composition of claim **14**, wherein

(a) the inflammatory disease or disorder is selected from the group consisting of neutropenia, sepsis, septic shock, Alzheimer's disease, multiple sclerosis, stroke, inflammatory bowel disease, age-related macular degeneration, chronic obstructive pulmonary disorder, orinflammation associated with burns, lung injury, osteoarthritis, atopic dermatitis, chronic urticaria, ischemia-reperfusion injury, acute respiratory distress syndrome, systemic inflammatory response syndrome, multiple organ dysfunction syndrome, tissue graft rejection, cancer and hyperacute rejection of transplanted organs; or

(b) the cardiovascular or cerebrovascular disorder is selected from the group consisting of myocardial infarction, coronary thrombosis, vascular occlusion, post-surgical vascular reocclusion, artherosclerosis, traumatic central nervous system injury and ischemic heart disease; or

(c) autoimmune disorder is selected from the group consisting of rheumatoid arthritis, C3 glomerulopathy (C3G), hidradenitis suppurativa (HS), systemic lupus erythematosus, Guillain-Barre syndrome, pancreatitis, lupus nephritis, lupus glomerulonephritis, psoriasis, immunoglobulin A (IgA) nephropathy, Crohn's disease, vasculitis, irritable bowel syndrome, dermatomyositis, multiple sclerosis, bronchial asthma, pemphigus, pemphigoid, scleroderma, myasthenia gravis, autoimmune hemolytic and thrombocytopenic states, Goodpasture's syndrome, immunovasculitis, tissue graft rejection and hyperacute rejection of transplanted organs; or

(d) the disease or disorder is a pathologic sequelae associated with the group consisting of insulin-dependent diabetes, mellitus, lupus nephropathy, Heyman nephritis, membranous nephritis, glomerulonephritis, contact sensitivity responses, and inflammation resulting from contact of blood with artificial surfaces; or

(e) the disease or disorder is selected from the group consisting of anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis, C3 glomerulopathy, hidradenitis suppurativa, and lupus nephritis; or

(f) the disease or disorder is anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis; or

(g) the disease or disorder is granulomatosis with polyangiitis; or

(h) the disease or disorder is microscopic polyangiitis; or

(i) the disease or disorder is C3 glomerulopathy; or

(j) the disease or disorder is hidradenitis suppurativa; or

(k) the disease or disorder is lupus nephritis.

16. The compound or composition for use of claim **13**, wherein option (2) applies, or the compound or composition of claims **14-15**, further comprising one or more additional therapeutic agents to be administered to the individual

17. The compound or composition of claim **16**,

wherein the one or more additional therapeutic agent is rituximab and/or cyclophosphamide.

18. Use of the compound of any one of claims **1-7** or the composition of any one of claims **10-12**, in the preparation of a medicament for treating an individual suffering from or susceptible to a disease or disorder involving pathologic activation of C5a receptors, wherein:

(a) the disease or disorder is an inflammatory disease or disorder; or

(b) the disease or disorder is a cardiovascular or cerebrovascular disorder; or

(c) the disease or disorder is an autoimmune disorder; or

(d) the disease or disorder is a pathologic sequelae associated with the group consisting of insulin-dependent diabetes, mellitus, lupus nephropathy, Heyman nephritis, membranous nephritis, glomerulonephritis, contact sensitivity responses, and inflammation resulting from contact of blood with artificial surfaces; or

(e) the disease or disorder is selected from the group consisting of anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis, C3 glomerulopathy, hidradenitis suppurativa, and lupus nephritis; or

(f) the disease or disorder is anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis; or

(g) the disease or disorder is granulomatosis with polyangiitis; or

(h) the disease or disorder is microscopic polyangiitis; or

(i) the disease or disorder is C3 glomerulopathy; or

(j) the disease or disorder is hidradenitis suppurativa; or

(k) the disease or disorder is lupus nephritis.

19. The use of claim **18**, wherein:

(a) the inflammatory disease or disorder is selected from the group consisting of neutropenia, sepsis, septic shock, Alzheimer's disease, multiple sclerosis, stroke, inflammatory

bowel disease, age-related macular degeneration, chronic obstructive pulmonary disorder, orinflammation associated with burns, lung injury, osteoarthritis, atopic dermatitis, chronic urticaria, ischemia-reperfusion injury, acute respiratory distress syndrome, systemic inflammatory response syndrome, multiple organ dysfunction syndrome, tissue graft rejection, cancer and hyperacute rejection of transplanted organs; or

(b) the disease cardiovascular or cerebrovascular disorder is selected from the group consisting of myocardial infarction, coronary thrombosis, vascular occlusion, post-surgical vascular reocclusion, artherosclerosis, traumatic central nervous system injury and ischemic heart disease; or

(c) autoimmune disorder is selected from the group consisting of rheumatoid arthritis, C3 glomerulopathy (C3G), hidradenitis suppurativa (HS), systemic lupus erythematosus, Guillain-Barre syndrome, pancreatitis, lupus nephritis, lupus glomerulonephritis, psoriasis, immunoglobulin A (IgA) nephropathy, Crohn's disease, vasculitis, irritable bowel syndrome, dermatomyositis, multiple sclerosis, bronchial asthma, pemphigus, pemphigoid, scleroderma, myasthenia gravis, autoimmune hemolytic and thrombocytopenic states, Goodpasture's syndrome, immunovasculitis, tissue graft rejection and hyperacute rejection of transplanted organs; or

(d) the disease or disorder is a pathologic sequelae associated with the group consisting of insulin-dependent diabetes, mellitus, lupus nephropathy, Heyman nephritis, membranous nephritis, glomerulonephritis, contact sensitivity responses, and inflammation resulting from contact of blood with artificial surfaces; or

(e) the disease or disorder is selected from the group consisting of anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis, C3 glomerulopathy, hidradenitis suppurativa, and lupus nephritis; or

(f) the disease or disorder is anti-neutrophil cytoplasmic antibody associate (ANCA) vasculitis; or

(g) the disease or disorder is granulomatosis with polyangiitis; or

(h) the disease or disorder is microscopic polyangiitis; or

(i) the disease or disorder is C3 glomerulopathy; or

(j) the disease or disorder is hidradenitis suppurativa; or

(k) the disease or disorder is lupus nephritis.

20. The use of claim **18** or claim **19**, wherein the medicament further comprises one or more additional therapeutic agents to be administered to the individual, and wherein the one or more additional therapeutic agent is rituximab and/or cyclophosphamide.